In the Drawings:

None

REMARKS

This amendment is in response to the Examiner's Office Action dated 3/10/2005. Applicant is appreciative for the recognized allowable subject matter. Amendments have been made to claim 1 for clarification purposes without adding new matter. This amendment should obviate outstanding issues and make the remaining claims allowable. Reconsideration of this application is respectfully requested in view of the foregoing amendment and the remarks that follow.

STATUS OF CLAIMS

Claims 1-3 and 5-9 are pending.

Claims 7-9 are allowed.

Claims 1, 2, 5 and 6 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tanabe et al. (USP 5333131) in view of Antonov (USP 6044080).

Claim 3 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Tanabe et al. in view of Antonov, as applied to claims 1 and 2 above, and further in view of Segal (USP 5737404).

OVERVIEW OF CLAIMED INVENTION

The presently claimed invention provides for a routing apparatus that obtains routing data conforming to a destination address of a packet that arrives from a line, adds the routing data onto the packet, and switches the packet based upon the routing data to send the packet to a prescribed line. The routing apparatus of the present invention comprises a main controller, a line interface, and a switch. The main controller has routing data generators that are associated

with respective ones of line speeds for generating routing data conforming to a requested destination address and sending the routing data to a respective requesting source. The line interface extracts a destination address from a packet that arrives from a line, generates a routing-data request for requesting the main controller to be notified of routing data conforming to this destination address, adds the routing data for which notification has been given by the main controller onto the packet, and outputs the packet. The switch sends the routing data request, which enters from a prescribed line interface to the main controller, sends the routing data from the main controller to a line interface of the requesting source, and switches a packet with attached routing data based upon the routing data to thereby send the packet to another line interface. The line interface adds a line identifier of a line onto the destination address of a packet that arrives from this line so that the routing-data request is created and requests the main controller to be notified of routing data, and the main controller responds to the request by generating routing data from whichever routing data generator, corresponding to a line speed indicated by the line identifier, and sends this routing data to the line interface that is the requesting source.

In accordance with the present invention, routing data generators disposed in both the individual line cards and main controller in the prior art are consolidated on the side of the main controller to achieve centralized management of the routing tables. This makes it possible to reduce the number of routing data generators used by the entire system, thereby lowering cost and raising mounting efficiency. Also, in accordance with the present invention, routing data generators need to be provided only in the main controller. When the system is started up, therefore, it is unnecessary to transfer routing tables from the main processor of the main

controller to the line cards. This makes it possible to shorten system start-up time when power is introduced and when the system recovers from failure. Further, in accordance with the present invention, when a line interface issues a routing data request with an attached line identifier, the main controller obtains routing data from the routing data generator that corresponds to the line speed and sends this routing data to the line interface that is the requesting source. As a result, routing data generators having different speeds can be used respectively for respective ones of the line speeds, inexpensive, low-speed routing data generators can be used and it is possible for a line card to accommodate lines of various line speeds, enabling the line accommodating efficiency of line cards to be improved. As a result, the routing apparatus can be lowered in cost.

REJECTIONS UNDER 35 U.S.C. §103(a)

Claims 1, 2, 5 and 6 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Tanabe et al. (USP 5,333,131) in view of Antonov (USP 6,044,080). Claim 3 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Tanabe et al. in view of Antonov, as applied to claims 1 and 2 above, and further in view of Segal (USP 5,737,404). To be properly rejected under 35 U.S.C. §103(a), the cited references, either by themselves or in combination, must provide each and every claim element of a system/apparatus claim, or each and every step of a method claim. Applicant contends that the Tanabe reference, either by itself or in combination with the Antonov or Segal references neither explicitly nor implicitly provides for the claim limitations as required by rejected claims 1, 2, 5, and 6.

Tanabe describes an ATM switch and a group of local nodes that are connected to a packet network through subscriber lines. On page 2 of the office action of 03/10/2005, the

examiner states that column 6, lines 4-5 of the Tanabe reference teaches "a main controller having a routing data generator for generating routing data conforming to a requested destination address and sending the routing data to a requesting source." However, a closer reading of the citation in column 6 merely reveals that Tanabe's central controller performs "processing control and resource management." Hence, applicants contend that the "central controller" of Tanabe fails to anticipate or render obvious applicants' "main controller", as defined in independent claim 1.

On page 3 of the office action of 03/10/2005, the examiner states that column 5, lines 55-67 and column 6, lines 4-60 teaches the applicants' claimed limitation (as claimed in independent claim 1) of a "line interface." However, a closer reading of this section only describes extracting the virtual channel identifier (VCI)/virtual path identifier (VPI) for accessing the label conversion circuit 26.

In Tanabe, as shown in figure 2 and as described in the specification, a local unit 1-1 having an ATM switch structure and a line interface 8a-1 changes a VPI/VCI attached to a header of an input cell, attaches a routing tag (port number PT) to the header of this input cell and supplies this cell to a self-routing switch 3-1. The switch 3-1 sends the cell to an output line indicated by the tag so that it is transferred towards a transit node 2-n. In the transmit node 2-1 (having an ATM switch structure), a route management processor 7-1 obtains a port number corresponding to a destination local node number of the cell which is input from the local unit 1-1 by way of a line interface 8c-1 and a self-routing switch 4-1. Then, the route management

processor 7-1 attaches a port number to the cell and inputs the cell to the self-routing switch 4-1. The self-routing switch 4-1 transfers the cell towards the destination local node.

Conspicuously absent from this citation (or the entire Tanabe reference) is a teaching for a line interface that extracts a destination address from a packet that arrives from a line, generates a routing-data request for requesting the main controller to be notified of routing data conforming to this destination address, adds the routing data for which notification has been given by the main controller onto the packet, and outputs the packet. Additionally, applicants also wish to note that the citations also fail to teach routing data generators associated with respective ones of line speed.

Applicants agree with the examiner's statement on page 3 of the office action that "Tanabe does not explicitly state wherein said main controller has routing data generators that are associated with respective ones of line speeds." Applicants, however, respectfully disagree with the examiner's statement on pages 3-4 of the office action that such a limitation is remedied by the Antonov reference.

Anoonov discloses a scalable parallel packet router. With reference to figure 2, Antonov discloses a scalable parallel packet router. In this router, on receiving a packet, a processing node 11 determines an egress high-speed communication line identifier from the packet's designating address using a routing table data set and determines an egress processing node identifier and a network interface identifier from the egress high-speed communication line identifier using an exit-table data set. Next, the data packet is sent to the egress processing node 11 along with the

network interface identifier by means of data interconnect 13 using the egress processing node identifier. Lastly, the egress processing node transmits the data packet from a network interface 12 having the network interface identifier to the egress high-speed communication line via multiplexer 15.

Based on the analysis presented above with respect to the Antonov reference, applicants contend that Antonov merely discloses the limitation of a process node that sends packets containing a communication line identifier to an egress processing node, but Antonov does not teach or suggest applicants' "main controller", as claimed in independent claim 1, that has routing data generators that are associated with respective ones of line speeds.

Applicants also further contend that the Antonov reference also fails to teach or suggest applicants' "line interface" limitation, as per independent claim 1, that adds a line identifier of a line onto a destination address of the packet that arrives from the line so that the routing data is created and requests said main controller to be notified of routing data.

Applicants also respectfully submit that the Antonov reference fails to teach or suggest applicants' "main controller", as per independent claim 1, that responds to the requests by generating routing data from whichever routing data generator corresponds to a line speed indicated by the line identifier and sending this routing data to the line interface that is the requesting source.

If the examiner still feels that the "main controller" and "line interface" limitations of independent claim 1 are disclosed in the Antonov reference, applicant respectfully reminds the examiner that it is the duty of the examiner to specifically point out each and every limitation of a claim being rejected as per §1.104(c)(2) of Title 37 of the Code of Federal Regulations and section 707 of the M.P.E.P., which explicitly states that "the particular part relied on must be designated" and "the pertinence of each reference, if not apparent, must be clearly explained and each rejected claim specified".

The above mentioned arguments with respect to independent claim 1 substantially apply to dependent claims 2-3, 5-6, as they inherit all the limitations of the claim from which they depend.

Applicants contend that the Tanabe reference, either by itself or in combination with the Antonov or Segal references neither explicitly nor implicitly provides for many of the limitations of the rejected claims. Applicants, therefore, respectfully request the examiner to withdraw the rejections with respect to claims 1, 2-3, and 5-6.

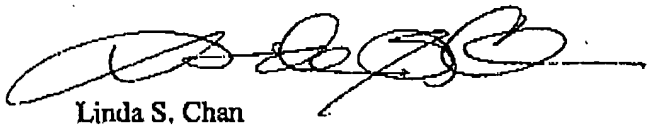
SUMMARY

As has been detailed above, none of the references, cited or applied, provide for the specific claimed details of applicant's presently claimed invention, nor renders them obvious. It is believed that this case is in condition for allowance and reconsideration thereof and early issuance is respectfully requested.

This amendment is being filed with a petition for extension of time. The Commissioner is hereby authorized to charge the petition fee, as well as any deficiencies in the fees provided to Deposit Account No. 50-1290.

If it is felt that an interview would expedite prosecution of this application, please do not hesitate to contact applicant's representative at the below number.

Respectfully submitted,



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August 10, 2005